Obleck Activity

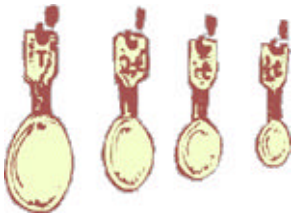
Standard 3240-05 Students will investigate changes in the Earth's crust and climate.
Objective 3240-0501 : Model changes in the earth's surface.

Intended Learning Outcomes
1a. Make observations and measurements (use intsruments as appropriate).
2g. Constuct models and simulations to describe and explaine natural phenomena.

Introduction: The asthenosphere is the area of the mantle just under the lithosphere. The asthenosphere has the properties of both a liquid and a solid. Cornstarch an water behaves inn a similar fashion. Try mixing your own cornstarch and water so you get an understanding of what the layer just under the mantle is like.

Materials:

2 small containers
cornstarch
water
stirring stick
teaspoon
tablespoon



Procedure:
1. In a small container place two tablespoons of cornstarch.
2. In another container place two teaspoons of water.
3. Slowly add the water to the cornstarch, mixing while adding the water. When the mixture becomes difficult to stir stop adding water.
4. Pour the mixture out into your hand. Observe as you pour. Does it have the properties of a solid, liquid or gas?
5. Try to roll the mixture into a ball applying pressure as you do. ressure Observe the mixture. Does it have th properties of a solid, liquid or gas?
6. You can also make more but do it in this ration of 2T. of cornstarch to 2t. of water.

Analysis:
1. How is the cornstarch similar to the asthenophere? How is it different? Click here to see an answer
remove this 2. How would the asthenosphere allow plates to move? Click here to see an answer
remove this 3. Why does it act the way it does?

Answer: both the asthenosphere and the cornstarch mixture have the properties of both a liquid and of a solid.

Answer: the cornstarch is a mixture of two compounds, but the composition of the asthenosphere is much more complex.

Answer: When the pressure is off the mixture, the water molecules move in between the cornstarch molecules so it acts like a liquid. When the pressure is on the water is force out from in between the cornstarch molecules so it acts like a solid.

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